

PROFILE SHEET **Earth Science**

Publisher: Holt, Rinehart & Winston

Text Title: Holt Science and Technology, Earth Science, Enhanced Online Edition, 2004

Science Standard	Rating		
	Adequate	Limited	No Evidence
ES.1	✓		
ES.2	✓		
ES.3	✓		
ES.4	✓		
ES.5	✓		
ES.6	✓		
ES.7	✓		
ES.8	✓		
ES.9	✓		
ES.10	✓		
ES.11	✓		
ES.12	✓		
ES.13	✓		
ES.14	✓		
Additional Criteria			
ES-AC.1	✓		
ES-AC.2	✓		
ES-AC.3	✓		
ES-AC.4	✓		
ES-AC.5	✓		

The Virginia Department of Education recommends to the Board of Education:

YES ✓

NO

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Science Standard	Rating Scale Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	Limited	No Evidence
ES.1 The student will plan and conduct investigations in which			
a) volume, area, mass, elapsed time, direction, temperature, pressure, distance, density, and changes in elevation/depth are calculated utilizing the most appropriate tools;	✓		
b) technologies, including computers, probeware, and global positioning systems (GPS) are used to collect, analyze, and report data and to demonstrate concepts and simulate experimental conditions;		✓	
c) scales, diagrams, maps, charts, graphs, tables, and profiles are constructed and interpreted;	✓		
d) variables are manipulated with repeated trials; and	✓		
e) a scientific viewpoint is constructed and defended (the nature of science).	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.2 The student will demonstrate scientific reasoning and logic by			
a) analyzing how science explains and predicts the interactions and dynamics of complex Earth systems;	✓		
b) recognizing that evidence is required to evaluate hypotheses and explanations;	✓		
c) comparing different scientific explanations for a set of observations about the Earth;	✓		
d) explaining that observation and logic are essential for reaching a conclusion; and	✓		
e) evaluating evidence for scientific theories.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.3 The student will investigate and understand how to read and interpret maps, globes, models, charts, and imagery. Key concepts include			
a) maps (bathymetric, geologic, topographic, and weather) and star charts;	✓		
b) imagery (aerial photography and satellite images);	✓		
c) direction and distance measurements on any map or globe; and		✓	
d) location by latitude and longitude and topographic profiles.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.4 The student will investigate and understand the characteristics of the Earth and the solar system. Key concepts include			
a) position of the Earth in the solar system;	✓		
b) sun-Earth-moon relationships (seasons, tides, and eclipses);	✓		
c) characteristics of the sun, planets, their moons, comets, meteors, and asteroids; and	✓		
d) the history and contributions of the space program.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.5 The student will investigate and understand how to identify major rock-forming and ore minerals based on physical and chemical properties. Key concepts include			
a) hardness, color and streak, luster, cleavage, fracture, and unique properties; and	✓		
b) uses of minerals.		✓	
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.6 The student will investigate and understand the rock cycle as it relates to the origin and transformation of rock types and how to identify common rock types based on mineral composition and textures. Key concepts include			
a) igneous (intrusive and extrusive);	✓		
b) sedimentary (clastic and chemical); and	✓		
c) metamorphic (foliated and unfoliated) rocks.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.7 The student will investigate and understand the differences between renewable and nonrenewable resources. Key concepts include			
a) fossil fuels, minerals, rocks, water, and vegetation;	✓		
b) advantages and disadvantages of various energy sources;	✓		
c) resources found in Virginia;		✓	
d) making informed judgments related to resource use and its effects on Earth systems; and	✓		
e) environmental costs and benefits.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.8 The student will investigate and understand geologic processes including plate tectonics. Key concepts include			
a) how geologic processes are evidenced in the physiographic provinces of Virginia including the Coastal Plain, Piedmont, Blue Ridge, Valley and Ridge, and Appalachian Plateau;		✓	
b) processes (faulting, folding, volcanism, metamorphism, weathering, erosion, deposition, and sedimentation) and their resulting features; and	✓		
c) tectonic processes (subduction, rifting and sea floor spreading, and continental collision).	✓		
Overall Rating for Standard	✓		

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Science Standard	Rating Scale Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	Limited	No Evidence
ES.9 The student will investigate and understand how freshwater resources are influenced by geologic processes and the activities of humans. Key concepts include			
a) processes of soil development;	✓		
b) development of karst topography;		✓	
c) identification of groundwater zones including water table, zone of saturation, and zone of aeration;	✓		
d) identification of other sources of fresh water including rivers, springs, and aquifers with reference to the hydrologic cycle;	✓		
e) dependence on freshwater resources and the effects of human usage on water quality; and	✓		
f) identification of the major watershed systems in Virginia including the Chesapeake Bay and its tributaries.		✓	
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.10 The student will investigate and understand that many aspects of the history and evolution of the Earth and life can be inferred by studying rocks and fossils. Key concepts include			
a) traces and remains of ancient, often extinct, life are preserved by various means in many sedimentary rocks;	✓		
b) superposition, cross-cutting relationships, index fossils, and radioactive decay are methods of dating bodies of rock;	✓		
c) absolute and relative dating have different applications but can be used together to determine the age of rocks and structures; and	✓		
d) rocks and fossils from many different geologic periods and epochs are found in Virginia.		✓	
Overall Rating for Standard	✓		

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Science Standard	Rating Scale Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	Limited	No Evidence
ES.11 The student will investigate and understand that oceans are complex, interactive physical, chemical, and biological systems and are subject to long- and short-term variations. Key concepts include			
a) physical and chemical changes (tides, waves, currents, sea level and ice cap variations, upwelling, and salinity variations);	✓		
b) importance of environmental and geologic implications;	✓		
c) systems interactions (density differences, energy transfer, weather, and climate);	✓		
d) features of the sea floor (continental margins, trenches, mid-ocean ridges, and abyssal plains) reflect tectonic processes; and	✓		
e) economic and public policy issues concerning the oceans and the coastal zone including the Chesapeake Bay.		✓	
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.12 The student will investigate and understand the origin and evolution of the atmosphere and the interrelationship of geologic processes, biologic processes, and human activities on its composition and dynamics. Key concepts include			
a) scientific evidence for atmospheric changes over geologic time;	✓		
b) current theories related to the effects of early life on the chemical makeup of the atmosphere;	✓		
c) comparison of the Earth's atmosphere to that of other planets;	✓		
d) atmospheric regulation mechanisms including the effects of density differences and energy transfer; and	✓		
e) potential atmospheric compositional changes due to human, biologic, and geologic activity.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.13 The student will investigate and understand that energy transfer between the sun and the Earth and its atmosphere drives weather and climate. Key concepts include			
a) observation and collection of weather data;	✓		
b) prediction of weather patterns;	✓		
c) severe weather occurrences such as tornadoes, hurricanes, and major storms; and	✓		
d) weather phenomena and the factors that affect climate including radiation and convection.	✓		
Overall Rating for Standard	✓		

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	Adequate	Limited	No Evidence
ES.14 The student will investigate and understand scientific concepts related to the origin and evolution of the universe. Key concepts include			
a) nebulae;	✓		
b) the origin of stars and star systems;	✓		
c) stellar evolution;	✓		
d) galaxies; and	✓		
e) cosmology (the Big Bang).	✓		
Overall Rating for Standard	✓		

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Additional Criteria	Rating Scale Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	Limited	No Evidence
1. Safe use of materials and equipment is encouraged.	✓		
Overall Rating for Additional Criteria 1	✓		
2. Materials emphasize the use of effective instructional practices and learning theories. <ul style="list-style-type: none"> • Students are guided through different approaches such as the learning cycle. • Students are provided the opportunity to conduct scientific inquiry appropriate for their age, grade, and maturity. • Concepts are introduced through concrete experiences. • Students are required to use manipulative materials during investigations and activities. • Multiple opportunities are provided for students to apply concepts. • Learning activities offer opportunities for students to revise their prior knowledge and create new knowledge. • Students are encouraged to pose questions and to identify problems, as well as propose multiple solutions and design and conduct tests of inference. • Students collect and interpret data through a variety of technologies and draw conclusions based on that data. 			
Overall Rating for Additional Criteria 2	✓		

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Additional Criteria	Rating Scale Please indicate the rating for each by placing a check mark (✓) in the appropriate cell.		
	Adequate	Limited	No Evidence
3. Materials present content in an accurate, unbiased manner, and are based on sound science. <ul style="list-style-type: none"> Materials do not contain content errors (omissions of current content, out-of-date content, overgeneralizations, etc.).* Materials do not contain production errors (misspelled words, word omissions, incorrect answers).* Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately. The materials are free of non-scientific explanation. 	✓		
Overall Rating for Additional Criteria 3	✓		

*Please note that the Department of Education does not certify that all inaccuracies and/or grammatical errors have been detected in this instructional item and reported in this correlation profile.

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	Adequate	Limited	No Evidence
4. Materials promote student assessment as an integral part of the instructional process. <ul style="list-style-type: none"> Assessment suggestions and scoring criteria for student performances on work such as lab practicals or tasks, concept maps, research projects, observation checklists, etc., are provided. Assessment items include multiple-choice, short answer, essay and open-ended questions with charts, graphs, and diagrams imbedded within the items. Options include techniques for assessing students' prior knowledge. Assessment items reflect the rigor and the intent of the standards. For example, they require students to use higher order thinking skills to apply, analyze, synthesize, evaluate, and make judgments or recommendations. 	✓		
Overall Rating for Additional Criteria 4	✓		

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	Adequate	Limited	No Evidence
5. Materials are presented in an organized, logical manner and are appropriate for the age, grade, and maturity of the students. <ul style="list-style-type: none"> • Materials are organized appropriately within and among units of study. • Format design includes titles, subheadings, and appropriate cross-referencing for ease of use. • Writing style, length of sentences, and vocabulary are appropriate. • Graphics and illustrations are appropriate. • Level of abstraction is appropriate, and real life examples, including careers are provided. • Sufficient applications are provided to promote depth of understanding. 	✓		
Overall Rating for Additional Criteria 5	✓		